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Towards a natural system of the Incurvarioidea. Part 3. Excurvaria gen. nov. for Incurvaria praelatella ([DENIS & SCHIFFERMÜLLER], 1775)

(Lepidoptera, Incurvariidae s. str.)

by

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Abstract: A monotypical genus *Excurvaria* gen. nov. is proposed for *Incurvaria praelatella* ([DENIS & SCHIFFERMÜLLER], 1775). The diagnostic characters of the new genus and the redescription of the species are given. The taxonomic position of the new genus is discussed. The colour-pattern of the wing, male and female genitalia of *E. praelatella* are figured.

Zusammenfassung: Für *Incurvaria praelatella* ([DENIS & SCHIFFERMÜLLER], 1775) wird die monotypische Gattung *Excurvaria* gen. nov. aufgestellt. Die Kennzeichen der neuen Gattung werden beschrieben. Die Flügelzeichnung und die Kopulationsorgane beider Geschlechter werden abgebildet und eine Wiederbeschreibung von *E. praelatella* gegeben.

Резюме: Монотипический род *Excurvaria* gen.nov. предложен для *Incurvaria praelatella* ([Denis & Schiffermüller], 1775). Установлена новая комбинация *Excurvaria praelatella* ([Denis & Schiffermüller], 1775) comb. nov. Приводятся диагноз нового рода, изображения рисунка крыльев, терминалий самца и самки и переописание *E. praelatella*.

Introduction

The subject of the paper is *Incurvaria praelatella* ([DENIS & SCHIFFERMÜLLER], 1775) – a well known European species of uncertain taxonomic position.

DENIS & SCHIFFERMÜLLER (1775) originally described *praelatella* in the genus TINEA L. STEPHENS (1829) transferred *praelatella* to the genus *Lampronia* created by him. TREITSCHKE (1830) placed this species into the genus *Adela* LATREILLE, but, so far as is known, his proposal was not accepted by any author.

ZELLER (1851, 1852) revised the generic system "moths with long and folded maxillar palpae" and laid the foundation of the widely accepted conception of the specific compositions and diagnostic characters of *Incurvaria* and *Lampronia*. According to ZELLER and his followers, *praelatella* was to be placed into the genus *Lampronia*, because the main diagnostic character of *Lampronia* sensu ZELLER was the appressed on vertex and frons head vestiture.

REBEL (1901) in his influential work did not accept the separation of *Lampronia* from *Incurvaria*, so *praelatella* was combined with the generic name *Incurvaria* for the first time. REBEL's conception of *Incurvaria* s.l. was accepted by many subsequent authors. Between

the REBEL- and NIELSEN & DAVIS-epoch several attempts have been made to reseparate these genera on different bases.
GERASIMOV (1952) again separated *Lampronia* from *Incurvaria* on the basis of larval biology and placed *praelatella* into the genus *Incurvaria* amongst other species with leafmining-casebearing caterpillars. However, his approach to the problem of *Incurvaria/Lampronia* distinctions was not generally accepted.
RAZOWSKI & WOJTUSIAK (1978, see also RAZOWSKI, 1978) also considered *Incurvaria* and *Lampronia* as two separate genera, but during their taxonomical research, based on the structure of the male genitalia (shape of juxta, valvar chaetotaxy), the specific composition of both *Incurvaria* and *Lampronia* was different from the previous ones. In their system, *praelatella* belonged to the genus *Lampronia*.
ZAGULAJEV (1978) based his key on the genera of Incurvariidae on the features of the head vestiture, shape of juxta (named "anellus" by him) and the presence/absence of star-shaped signa in the female bursa copulatrix. He considered the head vestiture of *praelatella* as "rough" and placed this species in the genus *Incurvaria*.
In the most recent system of the Incurvarioidea (which is being established due to numerous papers by NIELSEN & DAVIS), the position of this species is uncertain, because no publication by these authors was devoted specifically to *Incurvaria/Lampronia praelatella*. This species was mentioned by NIELSEN under both names, but these papers (KARSHOLT & NIELSEN, 1976, 1985) made no point on taxonomy. However, it is obvious that *praelatella* is to be placed in Incurvariidae s.str. sensu NIELSEN & DAVIS (see e.g. NIELSEN & DAVIS, 1985).
Without going into detail, I accept the NIELSEN & DAVIS conception of Incurvariidae s.str. as a working hypothesis in the present paper. I have studied some specimens of this species in order to clarify its taxonomic position among the incurvariids.
The careful analysis of the numerous structural features mainly of adult insects and partly of caterpillars' descriptions, made by GERASIMOV (1952) and WERNER (1958), has shown that *praelatella* cannot be placed in the recently known genus of Incurvariidae s.str. Therefore I propose the new genus *Excurvaria* gen. nov. for this species.
The diagnostic characters of the new genus and redescription of *Excurvaria praelatella* ([DENIS & SCHIFFERMÜLLER], 1775) comb. nov. are given below.
All the material examined is deposited in the collection of Zoological Institute of the Russian Academy of Sciences (St.-Petersburg).

Excurvaria gen. nov.

Type-species: *Incurvaria praelatella* ([DENIS & SCHIFFERMÜLLER], 1775).

Diagnosis
The current state of art in the morphological investigations of various genera of Incurvariidae s.str. allows me to place this genus close to *Paraclemensia* BUSCK. This statement can be supported by similarity in the following characters:

1) epiphysis on foretibia absent;
2) spinelike setae on internal surface of male valvae situated on transversal extended humps (see below);

3) tegumen with a pair of setose lobes, which possess nacked pointed projections (see below);
4) crochets on anal prolegs of caterpillars present.

Such combination of characters is unique among the Incurvariidae s.str.[1] Epiphysis is also absent in *Vespina* DAVIS, *Perthida* COMMON and in some species of *Incurvaria*. A similar pattern of valvar chaetotaxy can be observed in *Perthida* and *Subclemensia* KOZLOV. The 3rd and 4th characters are probably unique among the Incurvariidae s.str., but the caterpillars of *Subclemensia* and *Basileura* NIELSEN & DAVIS and *Simacauda* NIELSEN & DAVIS are unknown.
On the other hand, *E. praelatella* differs in several characters from the representatives of *Paraclemensia* as a whole. Those differences given in the following table can be considered as the diagnostic characters of the new genus.

	E. praelatella	*Paraclemensia* spp.
white spots on forewings	present	not present
caudal margin of tegumen	almost straight	with a prominent medial projection
paramedial caudally directed processes of transtilla	present	not present
ventral plate of juxta	widely anchor-shaped	diamond-shaped
armature of distal part of ductus ejaculatorius	consists of small spines of equal length	consists of small spines of various length; the largest of them are approx. 4 times longer than the smallest
ratio of length of apical plate of ovipositor to its width	approx. 0.80	approx. 0.29–0.39

Derivation of the name
The generic name "*Excurvaria*" is established in contrast to the name "*Incurvaria*" and must be used as of feminine gender.

Excurvaria praelatella ([DENIS & SCHIFFERMÜLLER], 1775) comb. nov.[2]

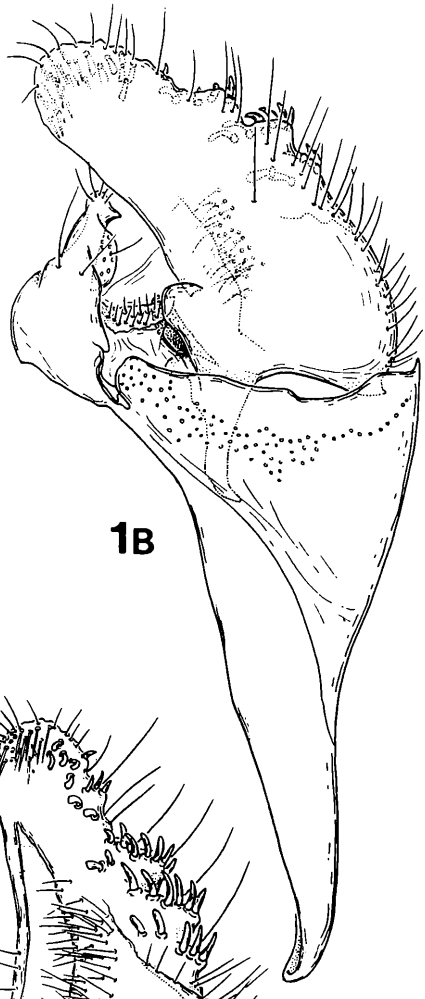
Tinea praelatella [DENIS & SCHIFFERMÜLLER], 1775:320; FABRICIUS, 1794:315;
Lampronia praelatella ([DENIS & SCHIFFERMÜLLER], 1775) STEPHENS, 1829:226; ZELLER, 1852:189–193; KARSHOLT & NIELSEN, 1976:242; RAZOVSKI, 1978:35–36, figs. 89–92, 276, Tab. 3: figs. 4, 5;
Adela praelatella ([DENIS & SCHIFFERMÜLLER], 1775) TREITSCHKE, 1830:301;

1 The following comparison based on the original data on palaearctic genera and on the descriptions of the palaearctic *Paraclemensia* published by NIELSEN (1982) and of the south hemispheran genera published by COMMON (1969) (*Perthida*) and NIELSEN & DAVIS (1981) (*Basileura* and *Simacauda*).
2 A full list of publications, in which this species has been mentioned consists of more than 30 references. That is why only the selected publications are cited.

Incurvaria praelatella ([DENIS & SCHIFFERMÜLLER], 1775) REBEL, 1901:241; KARSHOLT & NIELSEN, 1985:46; GERASIMOV, 1952:297–298; ZAGULAJEV, 1978:79, 81, figs. 60:3, 63:1, 67:3, 4;
Tinea decemguttella FABRICIUS, 1794:311 (synonymized by KARSHOLT & NIELSEN, 1976: 242).

Redescription
Head: The vestiture of the head and its appendages are pale yellow. the piliform scales on the frons and the vertex appressed, circumoccipitally rough. Scapus and three-segmented labial palpi densely covered with broad scales, the antennal flagellum and five-segmented folded maxillar palpi covered with short appressed piliform scales. Wings: The length of the forewing 4.25–5.50 mm. The forewings' colour-pattern consists of dark fuscous with faint purple sheen ground colour and white marks: very small spot at the base of the wing, the transverse band is approx. at 1/3 the distance from base, tornal spot and "costal" spot approx. 2/3 the distance from the base; and also, a small spot is present on costal margin between "costal" spot and transverse band in some specimens. Hindwings fuscous. The fringes of both, the fore- and hindwings in their apical parts are white. Legs: The foretibia are without epiphysis.
Male Genitalia. Tegumen: the cranial margin is concave, the caudal margin is convex, with a pair of setose lobes; each lobe has a short pointed hook-shaped naked projection on the caudal margin. Vinculum V-shaped; the posterolateral lobes are almost rectangular, the valvar emarginations are weakly developed and therefore the caudal margin is almost straight, and without prominent mediocaudal projection. The anal tube is long with a pair of elongate setose sclerites at its base. Valva broad at its base, gradually constricted to its rounded apex with three extended humps on the ventral margin; the first hump is approx. 1/2, the third approx. 3/4 the distance from the base, the second just between them. The valvar armature consists of four types of setae; on the internal surface of the valva: 1) pointed spine-like setae situated on above-mentioned humps in rows of 3 to 6 setae each, 2) the blunt spine-like setae are situated irregularly dorsally and apically of the previous ones, 3) the needle-like setae are situated on the dorsal part of the valvar apex; on both internal and external surfaces of valva: 4) the numerous hair-like setae are situated irregularly. The length ratio vinculum/valva approx. 3/4. Transtilla has a pair of cranial processes, a mediocaudal one and a pair of paramedial caudally directed ones. The cranial and medio-caudal processes subequal in length, length ratio of mediocaudal process to paramedial ones is approx. 1/2. The aedoeagus is basally tubular, in apical half divided into two lobes; the right (lateral) lobe is rounded, the left (ventral) lobe produces a long curved spine, dorsal and right sides of apical half of aedoeagus membranous. Juxta consists of a well developed ventral plate and two pairs of stick-shaped sclerites. Both the cranial and the caudal margins of the ventral plate are rounded. Stick-shaped sclerites are almost straight, and form an M-shaped structure in dorsal view, not longer than ventral plate.

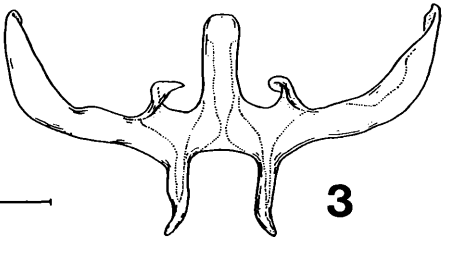
Figs. 1–3: Male genitalia of *Excurvaria praelatella*. 1 – tegumen, vinculum and valvae; 2 – internal surface of right valva; 3 – transtilla. A – ventral view, B – lateral view, C – dorsal view. Scale bar: 0.25 mm.



1B

1A

2



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Female Genitalia: 7th tergum subquadratic. 7th sternum subquadratic with a rounded caudal margin. The caudal margin has a notch in the middle. The 8th tergum has a median keel which is extended markedly beyond its caudal margin. The Apophyses anteriores is approx. 2.1 times longer than the median keel. 9th segment: The apical plate is compressed dorsoventrally with its trapeze-shaped basal part extremely long (ratio of its length to its width is approx. 0.8). The middle of the basal part's caudal margin produces a short and broad pentagonal process which has a pointed tip. The Apophyses posteriores is approx. 3.5 times longer than the median keel of the 8th tergum. The ductus bursae has longitudinal folds. Corpus bursae has a reticulate pattern of folds.

Material examined

1 ♂: Estonia, [Date unknown] (MORAWITZ) (micr. praep. N 13347).
1 ♂: Leningrad reg., 30 km NNW Luga, 16.VI.1992 (KUPRIJANOV).
8 ♂♂: Leningrad reg., 20 km S Boksitogorsk, 25.VI – 1.VII.1993 (KUPRIJANOV).
1 ♀: [? Europe], [Collector and date are unknown], Ex. coll. N. M. ROMANOFF (micr. praep. 7483).
1 ♀: [Germany], Hanover, [Date unknown] (Mn. [?MANN]) (micr. praep. N 13347).

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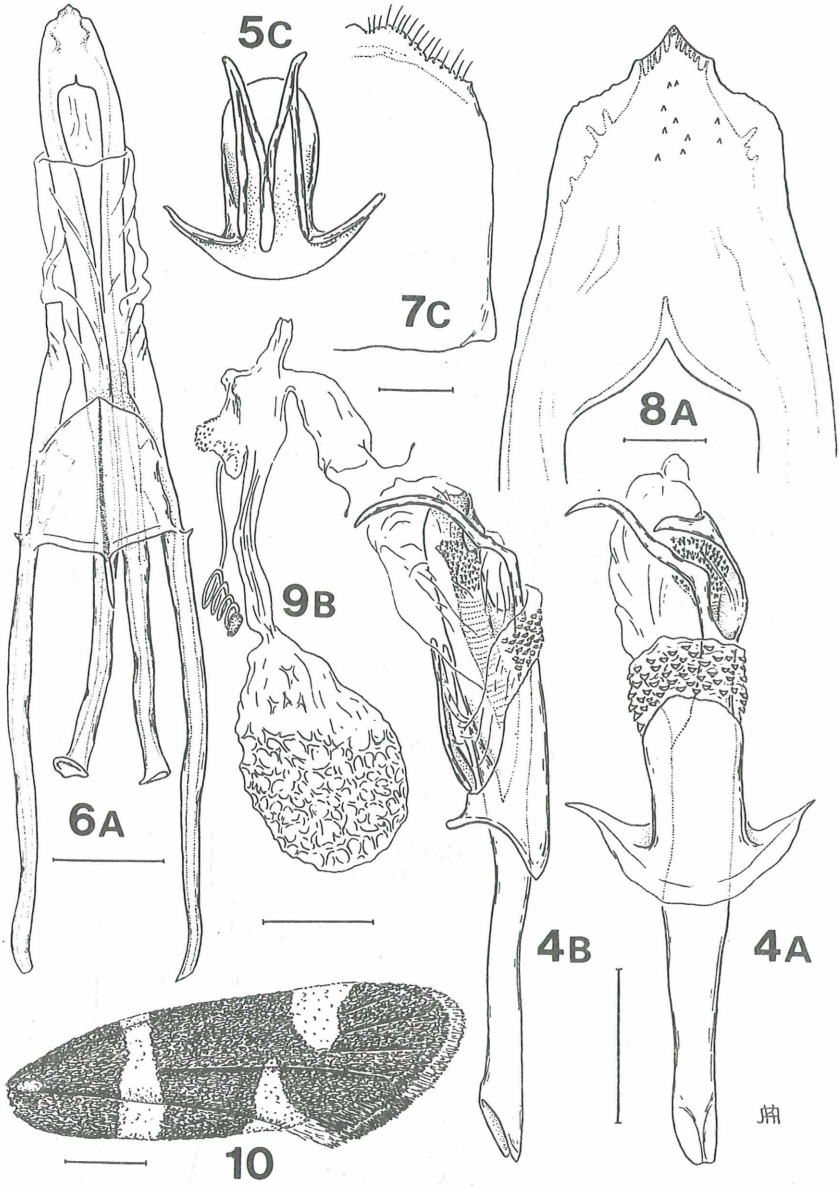
Figs. 4, 5: male genitalia of *Excurvaria praelatella*. 4 – aedoeagus and juxta; 5 – juxta. A – ventral view, B – lateral view, C – dorsal view. Scale bar: 0.25 mm.
Figs. 6–9: Female genitalia of *Excurvaria praelatella*. 6 – 8th and 9th segments; 7 – 7th sternum; 8 – tip of ovipositor; 9 – bursa copulatrix. A – ventral view, B – lateral view, C – dorsal view. Scale bar: for figs. 6, 7, 9: 0.25 mm, for fig. 8: 0.05 mm.
Fig. 10: Forewing of *Excurvaria praelatella*. Scale bar: 1 mm.



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